

FILE SHARING SYSTEM WITH DATA MIRRORING BY STORAGE SYSTEMS

ABSTRACT OF THE DISCLOSURE

5 A system for optimizing data access is provided. The system includes a cluster file system server, a number of cluster file system clients, and a storage system. The storage system further includes a number of disk drives organized into pairs. Each pair includes a master disk drive and one or more mirrored disk drives. Each mirrored disk drive contains a copy of the data stored on the master disk drive. When a file is needed, a cluster file system client sends a request to the cluster file system server. The cluster file system server first determines the location of the needed file, i.e., which pair has the needed file. Once the pair has been identified, the cluster file system server determines which disk drive within the pair should be accessed to retrieve the needed file. The determination is done so as to balance the access load of the disk drives within the pair. The information pertaining to which disk drive should be accessed is then forwarded to the cluster file system client thereby allowing the cluster file system client to access the appropriate disk drive to retrieve the needed file. Alternatively, the system may include a number of storage systems. A pair of disk drives may be spread across two or more storage systems. In one mode of operation where the master disk drive and the mirrored disk drives reside on different storage systems and the mirrored disk drives contain the latest copy of the data on the master disk drive, after obtaining information on the location of the needed file from the cluster file system server, the cluster file system client directly retrieves the needed file from the mirrored disk drive which is least frequently accessed. In another mode of operation where the master disk drive and the mirrored disk drives reside on different storage systems and the mirrored disk drives do not contain the latest copy of the data on the master disk drive, after obtaining information on the location of the needed file from the cluster file system server, the cluster file system client contacts the pertinent storage system and attempts to retrieve the needed file from a mirrored disk drive which is least frequently accessed. When it is determined that the mirrored disk drive does not have the latest copy of the data on the master disk drive, the pertinent storage system retrieves the needed data from the master disk drive and forwards a copy of that data to the cluster file system client.